The Journal of Cell Biology

Volume 161 | No. 1
April 14, 2003

– News –

In This Issue

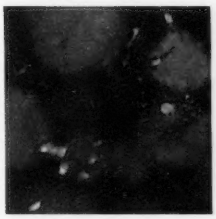
- RB pockets the cell cycle 12
- Life in a low calcium home
- APP causes an energy crisis
- Where new neurons come from
- Lamas in loops

E.C. Lai

Research Roundup

- Shaping up plants 14
- The spindle gets the Axs
- Ring around the chromatin
- Searching DNA in 3D
- Dying of a bad overhang

N. Lebrasseur



On the Cover

Cells isolated from postnatal brain that are positive for both CNP-GFP and NG2 form neurospheres (background), which then differentiate to form a wide range of neural cell types (foreground). See page 169.

– Reviews –

Comments

Malaria parasites solve the problem of a low calcium environment 17

P. Camacho

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

– Research Articles –

Reports

Myosin and the PAR proteins polarize microfilament-dependent forces that shape and position mitotic spindles in *Caenorhabditis elegans* 21

A.F. Severson and B. Bowerman

RAF1-activated MEK1 is found on the Golgi apparatus in late prophase and is required for Golgi complex fragmentation in mitosis 27

A. Colanzi, C. Sutterlin, and V. Malhotra

The conformational state of Tes regulates its zyxin-dependent recruitment to focal adhesions 33

B.K. Garvalov, T.E. Higgins, J.D. Sutherland, M. Zettl, N. Scaplehorn, T. Köcher, E. Piddini, G. Griffiths, and M. Way

Articles

Mitochondrial targeting and a novel transmembrane arrest of Alzheimer's amyloid precursor protein impairs mitochondrial function in neuronal cells 41

H.K. Anandatheerthavarada, G. Biswas, M.-A. Robin, and N.G. Avadhani

Abnormal neurofilament transport caused by targeted disruption of neuronal kinesin heavy chain KIF5A 55

C.-H. Xia, E.A. Roberts, L.-S. Her, X. Liu, D.S. Williams, D.W. Cleveland, and L.S.B. Goldstein

Arrest of mammalian fibroblasts in G1 in response to actin inhibition is dependent on retinoblastoma pocket proteins but not on p53 67

O.D. Lohez, C. Reynaud, F. Borel, P.R. Andreassen, and R.L. Margolis

Articles (cont.)

Phospholipase Cδ4 is required for Ca^{2+} mobilization essential for acrosome reaction in sperm 79

K. Fukami, M. Yoshida, T. Inoue, M. Kurokawa, R.A. Fissore, N. Yoshida, K. Mikoshiba, and T. Takenawa

Speract induces calcium oscillations in the sperm tail 89

C.D. Wood, A. Darszon, and M. Whitaker

Calcium signaling in a low calcium environment: how the intracellular malaria parasite solves the problem 103

M.L. Gazarini, A.P. Thomas, T. Pozzan, and C.R.S. Garcia

Prostaglandin $F_{2\alpha}$ stimulates growth of skeletal muscle cells via an NFATC2-dependent pathway 111

V. Horsley and G.K. Pavlath

GDNF promotes tubulogenesis of GFRα1-expressing MDCK cells by Src-mediated phosphorylation of Met receptor tyrosine kinase 119

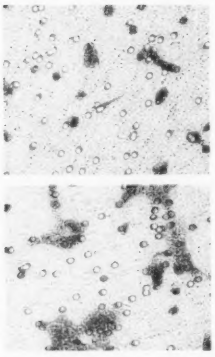
A. Popsueva, D. Poteryaev, E. Arighi, X. Meng, A. Angers-Loustau, D. Kaplan, M. Saarma, and H. Sariola

Synapse formation is regulated by the signaling adaptor GIT1 131

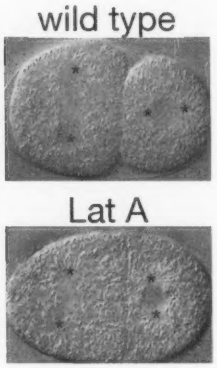
H. Zhang, D.J. Webb, H. Asmussen, and A.F. Horwitz

RPTP-α acts as a transducer of mechanical force on α_v/β_3-integrin–cytoskeleton linkages 143

G. von Wichert, G. Jiang, A. Kostic, K. De Vos, J. Sap, and M.P. Sheetz



Breast cell migration is stimulated (bottom) when metalloproteinases liberate a fragment from laminin-5 that can activate the epidermal growth factor receptor. See page 197.



Asymmetry in worm embyos (top) arises when myosin limits PAR-3 to the anterior cortex, thus producing asymmetry in the forces applied to microtubules at each pole. See page 21.

Integrin-specific signaling pathways controlling focal adhesion formation and cell migration 155

Z. Mostafavi-Pour, J.A. Askari, S.J. Parkinson, P.J. Parker, T.T.C. Ng, and M.J. Humphries

Postnatal NG2 proteoglycan–expressing progenitor cells are intrinsically multipotent and generate functional neurons 169

S. Belachew, R. Chittajallu, A.A. Aguirre, X. Yuan, M. Kirby, S. Anderson, and V. Gallo

Mesangial cells organize the glomerular capillaries by adhering to the G domain of laminin α5 in the glomerular basement membrane 187

Y. Kikkawa, I. Virtanen, and J.H. Miner

Binding to EGF receptor of a laminin-5 EGF-like fragment liberated during MMP-dependent mammary gland involution 197

S. Schenk, E. Hintermann, M. Bilban, N. Koshikawa, C. Hojilla, R. Khokha, and V. Quaranta

The Journal of Cell Biology

Volume 161 | No. 2
April 28, 2003

– News –

In This Issue

- Aurora B puts chromosomes in their place 218
- To grow or to shrink...
- *H. pylori* mobilizes cells
- Choosing replication origins
- Say NO to insulin

N. LeBrasseur

Research Roundup

- ROS for your roots 220
- Conserving synaptic weight
- Reconstituting a chloroplast transport system
- Calcium waves in membrane fusion
- *Toxoplasma* uses tough love

R.S. Tuma

On the Cover

The plus ends of microtubules capped with a GTP analogue are peeled back by XMAP215, previously known for its stabilization activity. The cap may mimic a paused state between growing and shrinking microtubules that is antagonized by XMAP215. See page 349.

– Reviews –

Mini-Reviews

Active repression by unliganded retinoid receptors in development: less is sometimes more 223

A.D. Weston, B. Blumberg, and T.M. Underhill

– Research Articles –

Reports

CSC-1: a subunit of the Aurora B kinase complex that binds to the Survivin-like protein BIR-1 and the Incenp-like protein ICP-1 229

A. Romano, A. Guse, I. Krascenicova, H. Schnabel, R. Schnabel, and M. Glotzer

Different degrees of lever arm rotation control myosin step size 237

D. Köhler, C. Ruff, E. Meyhöfer, and M. Bähler

Regulation of β cell glucokinase by S-nitrosylation and association with nitric oxide synthase 243

M.A. Rizzo and D.W. Piston

***Helicobacter pylori* CagA protein targets the c-Met receptor and enhances the motogenic response** 249

Y. Churin, L. Al-Ghoul, O. Kepp, T.F. Meyer, W. Birchmeier, and M. Naumann

Articles

Spatial distribution and specification of mammalian replication origins during G1 phase 257

F. Li, J. Chen, E. Solessio, and D.M. Gilbert

Aurora B couples chromosome alignment with anaphase by targeting BubR1, Mad2, and Cenp-E to kinetochores 267

C. Ditchfield, V.L. Johnson, A. Tighe, R. Ellston, C. Haworth, T. Johnson, A. Mortlock, N. Keen, and S.S. Taylor

Articles with related stories in the *In This Issue* section have page numbers in red.

Articles (cont.)

The small molecule Hesperadin reveals a role for Aurora B in correcting kinetochore–microtubule attachment and in maintaining the spindle assembly checkpoint 281

S. Hauf, R.W. Cole, S. LaTerra, C. Zimmer, G. Schnapp, R. Walter, A. Heckel, J. van Meel, C.L. Rieder, and J.-M. Peters

Sim4: a novel fission yeast kinetochore protein required for centromeric silencing and chromosome segregation 295

A.L. Pidoux, W. Richardson, and R.C. Allshire

Distinct in vivo roles for double-stranded RNA-binding domains of the *Xenopus* RNA-editing enzyme ADAR1 in chromosomal targeting 309

M. Doyle and M.F. Jantsch

YHR150w* and *YDR479c* encode peroxisomal integral membrane proteins involved in the regulation of peroxisome number, size, and distribution in *Saccharomyces cerevisiae 321

F.J. Vizeacoumar, J.C. Torres-Guzman, Y.Y.C. Tam, J.D. Aitchison, and R.A. Rachubinski

***LST8* negatively regulates amino acid biosynthesis as a component of the TOR pathway** 333

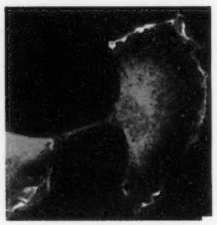
E.J. Chen and C.A. Kaiser

Identification of XMAP215 as a microtubule-destabilizing factor in *Xenopus* egg extract by biochemical purification 349

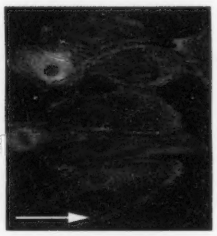
M. Shirasu-Hiza, P. Coughlin, and T. Mitchison

Stu2p, the budding yeast member of the conserved Dis1/XMAP215 family of microtubule-associated proteins is a plus end–binding microtubule destabilizer 359

M. van Breugel, D. Drechsel, and A. Hyman



Capping of the pointed ends of actin filaments (red) by Tmod3 (green) inhibits migration by decreasing free F-actin pointed and barbed ends. See page 371.



Endothelial cells respond to shear stress by RhoA-mediated depolarization and Rho/Rac1-mediated realignment, which allows them to migrate in the direction of the stress (arrow). See page 429.

Pointed-end capping by tropomodulin3 negatively regulates endothelial cell motility 371

R.S. Fischer, K.L. Fritz-Six, and V.M. Fowler

Control of axon elongation via an SDF-1α/Rho/mDia pathway in cultured cerebellar granule neurons 381

Y. Arakawa, H. Bito, T. Furuyashiki, T. Tsuji, S. Takemoto-Kimura, K. Kimura, K. Nozaki, N. Hashimoto, and S. Narumiya

FAK induces expression of Prx1 to promote tenascin-C–dependent fibroblast migration 393

D.M. McKean, L. Sisbarro, D. Ilic, N. Kaplan-Alburquerque, R. Nemenoff, M. Weiser-Evans, M.J. Kern, and P.L. Jones

Defining desmosomal plakophilin-3 interactions 403

S. Bonné, B. Gilbert, M. Hatzfeld, X. Chen, K.J. Green, and F. van Roy

Rap1 translates chemokine signals to integrin activation, cell polarization, and motility across vascular endothelium under flow 417

M. Shimonaka, K. Katagiri, T. Nakayama, N. Fujita, T. Tsuruo, O. Yoshie, and T. Kinashi

Shear stress–induced endothelial cell polarization is mediated by Rho and Rac but not Cdc42 or PI 3-kinases 429

B. Wojciak-Stothard and A.J. Ridley

Additions and corrections 441

The Journal of Cell Biology

Volume 161 | No. 3
May 12, 2003

– News –

In This Issue

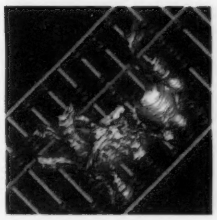
- Stressed cells dance on a bright stage 454
- Cut protein to boost fibers
- Breaking down barriers
- Getting a handle on centrosomes
- The neutrophil as firefighter

A.W. Dove

Research Roundup

- MicroRNAs make big splash in apoptosis 456
- Shared amyloid oligomer structure proves toxic
- Math connects vascular network to the universe
- Turning RacGAP into a RhoGAP
- Crm1 locks up replication factors

R.S. Tuma



On the Cover

A composition by Conn Peterson (San Francisco, CA) includes a tomographic reconstruction by Mark S. Ladinsky and Kathryn E. Howell (University of Colorado, Boulder, CO) showing a close association of a portion of the ER (blue) with Golgi cisternae (gold and red). See the special section on computational biology in this issue, starting on page 463.

This issue of the JCB
Special Mini-Review series on
Computational Biology

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* or *Mini-Reviews* have page numbers in blue; the computational biology section is indicated by yellow.

– Reviews –

Comments

Holey barrier: claudins and the regulation of brain endothelial permeability 459

K. Matter and M.S. Balda

Amyloid as a natural product 461

J.W. Kelly and W.E. Balch

Computational cell biology 463

I. Mellman and T. Misteli

Mini-Reviews

Inventories to insights 465

J.D. Aitchison and T. Galitski

Modeling network dynamics: the *lac* operon, a case study 471

J.M.G. Vilar, C.C. Guet, and S. Leibler

Computational imaging in cell biology 477

R. Eils and C. Athale

– Research Articles –

Reports

Spindle orientation in *Saccharomyces cerevisiae* depends on the transport of microtubule ends along polarized actin cables 483

E. Hwang, J. Kusch, Y. Barral, and T.C. Huffaker

Neurofilament heavy chain side arm phosphorylation regulates axonal transport of neurofilaments 489

S. Ackerley, P. Thornhill, A.J. Grierson, J. Brownlees, B.H. Anderton, P.N. Leigh, C.E. Shaw, and C.C.J. Miller

Articles

Oscillatory nucleocytoplasmic shuttling of the general stress response transcriptional activators Msn2 and Msn4 in *Saccharomyces cerevisiae* 497

M. Jacquet, G. Renault, S. Lallet, J. De Mey, and A. Goldbeter

Mitochondria to nucleus stress signaling: a distinctive mechanism of NFκB/Rel activation through calcineurin-mediated inactivation of IκBβ 507

G. Biswas, H.K. Anandatheerthavarada, M. Zaidi, and N.G. Avadhani

Proprotein convertase cleavage liberates a fibrillogenic fragment of a resident glycoprotein to initiate melanosome biogenesis 521

J.F. Berson, A.C. Theos, D.C. Harper, D. Tenza, G. Raposo, and M.S. Marks

A novel human protein of the maternal centriole is required for the final stages of cytokinesis and entry into S phase 535

A. Gromley, A. Jurczyk, J. Sillibourne, E. Halilovic, M. Mogensen, I. Groisman, M. Blomberg, and S. Doxsey

Androgen-stimulated DNA synthesis and cytoskeletal changes in fibroblasts by a nontranscriptional receptor action 547

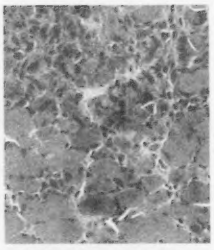
G. Castoria, M. Lombardi, M.V. Barone, A. Bilancio, M. Di Domenico, D. Bottero, F. Vitale, A. Migliaccio, and F. Auricchio

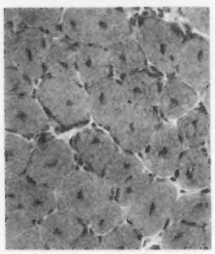
α-Adducin dissociates from F-actin and spectrin during platelet activation 557

K.L. Barkalow, J.E. Italiano, Jr., D.E. Chou, Y. Matsuoka, V. Bennett, and J.H. Hartwig

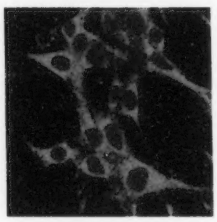
Intact satellite cells lead to remarkable protection against *Smn* gene defect in differentiated skeletal muscle 571

S. Nicole, B. Desforges, G. Millet, J. Lesbordes, C. Cifuentes-Diaz, D. Vertes, M.L. Cao, F. De Backer, L. Languille, N. Roblot, V. Joshi, J.-M. Gillis, and J. Melki





Satellite cells improve the survival and motor performance of mutant mice suffering from chronic myopathy (top) by aiding in skeletal muscle regeneration (bottom). See page 571.



Mitochondrial stress-induced activation of NFκβ depends on calcineurin-mediated dephosphorylation and inactivation of IkBβ (green). See page 507.

Essential functions of p21-activated kinase 1 in morphogenesis and differentiation of mammary glands 583

R.-A. Wang, R.K. Vadlamudi, R. Bagheri-Yarmand, I. Beuvink, N.E. Hynes, and R. Kumar

***deep-orange* and *carnation* define distinct stages in late endosomal biogenesis in *Drosophila* melanogaster** 593

V. Sriram, K.S. Krishnan, and Satyajit Mayor

Role of *Drosophila* Rab5 during endosomal trafficking at the synapse and evoked neurotransmitter release 609

T. Wucherpfennig, M. Wilsch-Bräuninger, and M. González-Gaitán

Neural cell adhesion molecule (NCAM) association with PKCβ$_2$ via βI spectrin is implicated in NCAM-mediated neurite outgrowth 625

I. Leshchyns'ka, V. Sytnyk, J.S. Morrow, and M. Schachner

PMN transendothelial migration decreases nuclear NFκB in IL-1β–activated endothelial cells: role of PECAM-1 641

G. Cepinskas, J. Savickiene, C.V. Ionescu, and P.R. Kvietys

Size-selective loosening of the blood-brain barrier in claudin-5–deficient mice 653

T. Nitta, M. Hata, S. Gotoh, Y. Seo, H. Sasaki, N. Hashimoto, M. Furuse, and S. Tsukita

The Journal of Cell Biology

Volume 161 | No. 4
May 26, 2003

– News –

In This Issue

- Tumor cells: a single signal to divide and conquer? 666
- Modulating AMPA receptors makes memories special
- Dance of the podosomes
- Glycosylation's active site—finally
- Coping with the stress of morphogenesis

A.W. Dove

Research Roundup

- Small minerals make strong bones 668
- Selectins with a catch
- Calcium goes nuclear
- Metastasizing in search of oxygen
- A graveyard for mRNA

W.A. Wells

– Reviews –

Comments

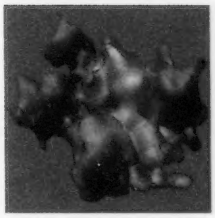
Is HP1 an RNA detector that functions both in repression and activation? 671

R. Kellum

Mini-Reviews

Caveolae/raft-dependent endocytosis 673

I.R. Nabi and P.U. Le



On the Cover

Fission of a large podosome cluster precursor (pink) gives rise to four daughter podosomes (red). Podosomes may also assemble de novo. See page 697.

– Research Articles –

Reports

Interplay of signal recognition particle and trigger factor at L23 near the nascent chain exit site on the *Escherichia coli* ribosome 679

R.S. Ullers, E.N.G. Houben, A. Raine, C.M. ten Hagen-Jongman, M. Ehrenberg, J. Brunner, B. Oudega, N. Harms, and J. Luirink

Different cofactor activities in γ-secretase assembly: evidence for a nicastrin–Aph-1 subcomplex 685

Y. Hu and M.E. Fortini

The Sec1p/Munc18 (SM) protein, Vps45p, cycles on and off membranes during vesicle transport 691

N.J. Bryant and D.E. James

Macrophage podosomes assemble at the leading lamella by growth and fragmentation 697

J.G. Evans, I. Correia, O. Krasavina, N. Watson, and P. Matsudaira

Articles

Heterochromatin protein 1 (HP1) is associated with induced gene expression in *Drosophila* euchromatin 707

L. Piacentini, L. Fanti, M. Berloco, B. Perrini, and S. Pimpinelli

Photocross-linking of nascent chains to the STT3 subunit of the oligosaccharyltransferase complex 715

I. Nilsson, D.J. Kelleher, Y. Miao, Y. Shao, G. Kreibich, R. Gilmore, G. von Heijne, and A.E. Johnson

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

Articles (cont.)

A novel pathway for MuSK to induce key genes in neuromuscular synapse formation 727

E. Lacazette, S. Le Calvez, N. Gajendran, and H.R. Brenner

Colocalization of synapsin and actin during synaptic vesicle recycling 737

O. Bloom, E. Evergren, N. Tomilin, O. Kjaerulff, P. Löw, L. Brodin, V.A. Pieribone, P. Greengard, and O. Shupliakov

Keratin 8 protection of placental barrier function 749

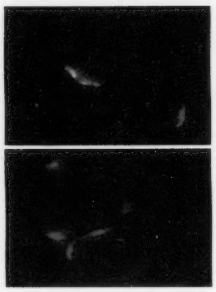
D. Jaquemar, S. Kupriyanov, M. Wankell, J. Avis, K. Benirschke, H. Baribault, and R.G. Oshima

The *Caenorhabditis elegans vab-10* spectraplakin isoforms protect the epidermis against internal and external forces 757

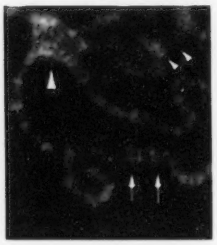
J.M. Bosher, B.-S. Hahn, R. Legouis, S. Sookhareea, R.M. Weimer, A. Gansmuller, A.D. Chisholm, A.M. Rose, J.-L. Bessereau, and M. Labouesse

Dishevelled activates Ca^{2+} flux, PKC, and CamKII in vertebrate embryos 769

L.C. Sheldahl, D.C. Slusarski, P. Pandur, J.R. Miller, M. Kühl, and R.T. Moon



A dominant–negative version of JNK (green) blocks acetylcholine receptor accumulation (red) and muscle fiber subsynaptic differentiation. See page 727.



HP1 (green), normally associated with gene silencing, accumulates at areas of active gene expression (arrows) on chromosomes. See page 707.

Kinetic analysis of receptor-activated phosphoinositide turnover 779

C. Xu, J. Watras, and L.M. Loew

Contact inhibition of VEGF-induced proliferation requires vascular endothelial cadherin, β-catenin, and the phosphatase DEP-1/CD148 793

M. Grazia Lampugnani, A. Zanetti, M. Corada, T. Takahashi, G. Balconi, F. Breviario, F. Orsenigo, A. Cattelino, R. Kemler, T.O. Daniel, and E. Dejana

Functional studies and distribution define a family of transmembrane AMPA receptor regulatory proteins 805

S. Tomita, L. Chen, Y. Kawasaki, R.S. Petralia, R.J. Wenthold, R.A. Nicoll, and D.S. Bredt

$\alpha_v\beta_3$ integrin expression up-regulates cdc2, which modulates cell migration 817

T. Manes, D.-Q Zheng, S. Tognin, A.S. Woodard, P.C. Marchisio, and L.R. Languino

The Journal of Cell Biology

Volume 161 | No. 5
June 9, 2003

– News –

In This Issue

- Conjunctions of junctions 832
- Wrong connexin signals cataracts
- Agrin at CNS synapses
- Catching a kinase in the act
- Fusion promoter or fusion inhibitor?

A.W. Dove

Research Roundup

- A view of antibody maturation 834
- GPR-1/2 support unequal division
- Apoptosis leaves its mark on chromatin
- A cytokine that packs a punch
- Cyclin B knows its place

N. LeBrasseur

Editorial

The JCB 2003: progress, policies, and procedures 837

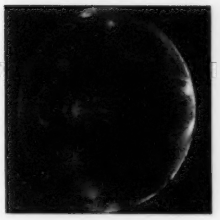
M. Rossner

– Reviews –

Mini-Reviews

The liberation of CD44 839

J. Cichy and E. Puré



On the Cover

Cataracts develop in a heterozygous knock-in mouse that expresses a mixture of connexins. Ion coupling is maintained, but dye coupling is reduced, suggesting that the altered gap junctions cannot transmit a critical developmental signal. See page 969.

– Research Articles –

Reports

Regulation of leading edge microtubule and actin dynamics downstream of Rac1 845

T. Wittmann, G.M. Bokoch, and C.M. Waterman-Storer

Nanometer targeting of microtubules to focal adhesions 853

O. Krylyshkina, K.I. Anderson, I. Kaverina, I. Upmann, D.J. Manstein, J.V. Small, and D.K. Toomre

Articles

Requirement of transcription factor NFAT in developing atrial myocardium 861

W. Schubert, X. Yong Yang, T.T.C. Yang, S.M. Factor, M.P. Lisanti, J.D. Molkentin, M. Rincón, and C.-W. Chow

The fission yeast cytokinesis formin Cdc12p is a barbed end actin filament capping protein gated by profilin 875

D.R. Kovar, J.R. Kuhn, A.L. Tichy, and T.D. Pollard

Ras recruits mitotic exit regulator Lte1 to the bud cortex in budding yeast 889

S. Yoshida, R. Ichihashi, and A. Toh-e

A genetically encoded fluorescent reporter reveals oscillatory phosphorylation by protein kinase C 899

J.D. Violin, J. Zhang, R.Y. Tsien, and A.C. Newton

BMPs signal alternately through a SMAD or FRAP–STAT pathway to regulate fate choice in CNS stem cells 911

P. Rajan, D.M. Panchision, L.F. Newell, and R.D.G. McKay

Articles with related stories in the *In This Issue* section have page numbers in red.

Articles (cont.)

The COOH-terminal domain of agrin signals via a synaptic receptor in central nervous system neurons 923

C.L. Hoover, L.G.W. Hilgenberg, and M.A. Smith

Reactive oxygen species as essential mediators of cell adhesion: the oxidative inhibition of a FAK tyrosine phosphatase is required for cell adhesion 933

P. Chiarugi, G. Pani, E. Giannoni, L. Taddei, R. Colavitti, G. Raugei, M. Symons, S. Borrello, T. Galeotti, and G. Ramponi

Tetraspanins CD9 and CD81 function to prevent the fusion of mononuclear phagocytes 945

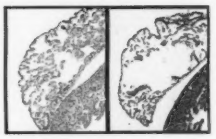
Y. Takeda, I. Tachibana, K. Miyado, M. Kobayashi, T. Miyazaki, T. Funakoshi, H. Kimura, H. Yamane, Y. Saito, H. Goto, T. Yoneda, M. Yoshida, T. Kumagai, T. Osaki, S. Hayashi, I. Kawase, and E. Mekada

A novel mechanism of myocyte degeneration involving the Ca^{2+}-permeable growth factor–regulated channel 957

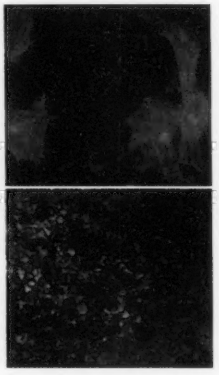
Y. Iwata, Y. Katanosaka, Y. Arai, K. Komamura, K. Miyatake, and M. Shigekawa

Dominant cataracts result from incongruous mixing of wild-type lens connexins 969

F.J. Martinez-Wittinghan, C. Sellitto, L. Li, X. Gong, P.R. Brink, R.T. Mathias, and T.W. White



The transcription factor NFAT is required for normal (left) development of the atrial myocardium, at least in part because it directly regulates expression of cardiac troponin-I and troponin-T genes. See page 861.



A single ligand, BMP4, can direct stem cells towards either a smooth muscle fate (at low cell density; top) or glial fate (at high cell density; bottom, in green). See page 911.

Neuroglian, Gliotactin, and the Na^+/K^+ ATPase are essential for septate junction function in *Drosophila* 979

J.L. Genova and R.G. Fehon

Gliotactin, a novel marker of tricellular junctions, is necessary for septate junction development in *Drosophila* 991

J. Schulte, U. Tepass, and V.J. Auld

The Journal of Cell Biology

Volume 161 | No. 6
June 23, 2003

– News –

In This Issue

- Two ways VEGF-A builds a vessel 1006
- Catastrophe under pressure
- E-cadherin immobilizes cells from the inside
- Golgi united are also divided
- NRG-1 talks back to neurons

N. LeBrasseur

Research Roundup

- A tumorigenic culprit in ES cells 1008
- WASPs with memory
- *Helicobacter* breaks down junctions
- Committing to mitosis
- Anchored by feedback

W.A. Wells

On the Cover

Filopodia on endothelial cells (green) at the tip of vascular sprouts probe for VEGF-A gradients as guidance cues. Cells behind the tip cells proliferate in response to VEGF-A. See page 1163.

– Reviews –

Comments

Lipolysis: more than just a lipase 1011

M.J. Birnbaum

Mini-Reviews

The tale of tail-anchored proteins: coming from the cytosol and looking for a membrane 1013

N. Borgese, S. Colombo, and E. Pedrazzini

Articles with related stories in the *In This Issue* section have page numbers in red; articles with *Comments* have page numbers in blue.

– Research Articles –

Reports

A requirement for MAP kinase in the assembly and maintenance of the mitotic spindle 1021

M.M. Horne and T.M. Guadagno

Dynamic instability of microtubules is regulated by force 1029

M.E. Janson, M.E. de Dood, and M. Dogterom

Yeast osmosensor Sln1 and plant cytokinin receptor Cre1 respond to changes in turgor pressure 1035

V. Reiser, D.C. Raitt, and H. Saito

Articles

The condensin complex is required for proper spindle assembly and chromosome segregation in *Xenopus* egg extracts 1041

S.M. Wignall, R. Deehan, T.J. Maresca, and R. Heald

A network of transcriptional and signaling events is activated by FGF to induce chondrocyte growth arrest and differentiation 1053

L. Dailey, E. Laplantine, R. Priore, and C. Basilico

The localization and phosphorylation of p47 are important for Golgi disassembly–assembly during the cell cycle 1067

K. Uchiyama, E. Jokitalo, M. Lindman, M. Jackman, F. Kano, M. Murata, X. Zhang, and H. Kondo

Articles (cont.)

Formin-dependent actin assembly is regulated by distinct modes of Rho signaling in yeast 1081

Y. Dong, D. Pruyne, and A. Bretscher

Perilipin A is essential for the translocation of hormone-sensitive lipase during lipolytic activation 1093

C. Sztalryd, G. Xu, H. Dorward, J.T. Tansey, J.A. Contreras, A.R. Kimmel, and C. Londos

Mice with targeted disruption of the fatty acid transport protein 4 (Fatp 4, Slc27a4) gene show features of lethal restrictive dermopathy 1105

T. Herrmann, F. van der Hoeven, H.-J. Gröne, A.F. Stewart, L. Langbein, I. Kaiser, G. Liebisch, I. Gosch, F. Buchkremer, W. Drobnik, G. Schmitz, and W. Stremmel

Ergosterol is required for targeting of tryptophan permease to the yeast plasma membrane 1117

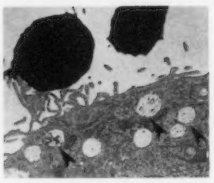
K. Umebayashi and A. Nakano

Back signaling by the Nrg-1 intracellular domain 1133

J. Bao, D. Wolpowitz, L.W. Role, and D.A. Talmage

ADP ribosylation factor 6 is activated and controls membrane delivery during phagocytosis in macrophages 1143

F. Niedergang, E. Colucci-Guyon, T. Dubois, G. Raposo, and P. Chavrier



Rab6 activity is required for phagocytosis. In its absence, membrane-recycling vesicles accumulate (arrowheads), and pseudopod extension is impaired. See page 1093.

Loss of turgor pressure in yeast inactivates the osmosensing histidine kinase Sln1 (green), thus activating the MAP kinase Hog1. See page 1035.

Critical role for scaffolding adapter Gab2 in FcγR-mediated phagocytosis 1151

H. Gu, R.J. Botelho, M. Yu, S. Grinstein, and B.G. Neel

VEGF guides angiogenic sprouting utilizing endothelial tip cell filopodia 1163

H. Gerhardt, M. Golding, M. Fruttiger, C. Ruhrberg, A. Lundkvist, A. Abramsson, M. Jeltsch, C. Mitchell, K. Alitalo, D. Shima, and C. Betsholtz

Low density lipoprotein receptor–related protein is a calreticulin coreceptor that signals focal adhesion disassembly 1179

A.W. Orr, C.E. Pedraza, M.A. Pallero, C.A. Elzie, S. Goicoechea, D.K Strickland, and J.E. Murphy-Ullrich

Adhesion-independent mechanism for suppression of tumor cell invasion by E-cadherin 1191

A.S.T. Wong and B.M. Gumbiner